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NOTES AND LITERATURE

PALEONTOLOGY

Jordan's Guide to the Study of Fishes.¹—Without question this is one of the most useful and reliable, as it is also the most comprehensive of general works consecrated to the class of fishes. Every subject that is properly included within the domain of ichthyology, whether from a purely scientific, historical, economical, or even Waltonian standpoint,—in fact, all that pertains to fishes living and fossil,—is awarded its place in this repository, and is treated in a manner only possible for the expert of life-long experience. But for the exceptional qualifications of the author, a work of such magnitude and intricacy of details could scarcely have resulted successfully without the coöperation of numerous specialists; the mere labor of bringing together the results of painstaking research during the last few years implies a capacity often regarded as an attribute of genius. Surely the author is to be congratulated upon having accomplished his task so well, and students of ichthyology in general upon having at their command a wealth of carefully analyzed and orderly arranged facts.

Although addressed primarily to students of the modern fauna, this large compendium in two volumes takes ample account of fossil forms. Several of the earlier groups are treated in separate chapters at considerable length, and others are referred to constantly throughout the work. In respect to primitive Devonian fishes, or fish-like vertebrates, the latest contributions of Traquair, Dean, Patten, Regan, and others are passed in review, with mention of newly discovered structural features, and discussion of latest proposed changes in classification. The chapter on Arthrodirei is modeled largely after Dean's recent treatment of the group, hence their exclusion from Dipnoans, a step that we are compelled to regard as retrogressive in view of all the evidence now accumulated in favor of their union. It is also to be regretted that new cuts have not been introduced to replace several antiquated and misleading figures of Ostracophores, and even "Ganoids." Scientific text-books often remind us that the law of the

¹Jordan, D. S. *A Guide to the Study of Fishes*. New York, Henry Holt and Co., 1905. 2 vols., 8vo.

survival of the fittest is apparently reversed in the case of poor illustrations. Figures of recent forms, however, in the work under discussion, are uniformly excellent. Those of the fossil forms that have been washed over may appear more artistic, but certainly have not lost their obscurity. The profusion of illustrations is gratifying as it is remarkable; yet one would willingly spare some of them for greater accuracy of detail in the rest.

No other general treatise on fishes, not even the most recent, can compare with this as regards the fullness with which fossil representatives are discussed in connection with the recent. This is as it should be, and sets a praiseworthy example for other zoölogical writers to emulate. When we have said that the treatment throughout betrays the master hand, the character of the work and its authoritativeness have been sufficiently indicated.

C. R. E.

Lankester's Extinct Animals.¹—Under this title is collected in book form, of convenient size and well illustrated, the series of paleontological lectures delivered by the Director of the natural history departments of the British Museum during the preceding winter. Since the days of Buckland, Mantell, and Hugh Miller, the British reading public has not lacked popular works for keeping in touch with the progress of paleontological discovery, and for picturing vividly before the imagination the life of bygone ages. Of late years American readers have been even more liberally provided for, through the medium of several first-class popular works, good, bad, and indifferent magazine articles, and the too often absurd exploitations of the Sunday press. Thus there has been no dearth of opportunity for becoming acquainted, in a literary way at least, with creatures of other days.

The new work displays a more rational treatment of the subject than many of its predecessors, there is a more judicious selection and arrangement of facts, and there is constant appeal to the reader to take the book in hand as one would his Baedekker or art museum catalogue, in order to compare the things actually placed on exhibition with what is said about them. This implies, of course, that the majority of readers have access to large public collections; but for those who have not this privilege, more than two hundred illustrations, mostly from

¹Lankester, E. R. *Extinct Animals*. New York, Henry Holt and Co., 1905. 8vo, 331 pp., 218 figs.